

IN THE CLAIMS:

Please amend the claims as shown in the following listing of claims:

1. (Original) A method of forming a composite tungsten film, comprising: sequentially depositing tungsten nucleation layers and tungsten bulk layers on a substrate to form a composite tungsten layer, wherein each of the tungsten nucleation layers and the tungsten bulk layers have a thickness less than about 300 Å.
2. (Original) The method of claim 1 wherein each of the tungsten bulk layers has a thickness within a range of about 150 Å to about 250 Å.
3. (Original) The method of claim 1 wherein each of the tungsten nucleation layers has a thickness within a range of about 15 Å to about 50 Å.
4. (Original) The method of claim 1 wherein the composite tungsten film has a thickness within a range of about 500 Å to about 3000 Å.
5. (Original) The method of claim 1 wherein each of the tungsten nucleation layers is deposited by alternately adsorbing a tungsten-containing precursor and a reducing gas on the substrate.
6. (Original) The method of claim 5 wherein the tungsten-containing precursor is selected from the group consisting of tungsten hexafluoride (WF₆) and tungsten carbonyl (W(CO)₆).
7. (Original) The method of claim 5 wherein the reducing gas is selected from the group consisting of silane (SiH₄), disilane (Si₂H₆), dichlorosilane (SiCl₂H₂), borane (BH₃), diborane (B₂H₆), triborane (B₃H₉), tetraborane (B₄H₁₂),

pentaborane (B_5H_{15}), hexaborane (B_6H_{18}), heptaborane (B_7H_{21}), octaborane (B_8H_{24}), nanoborane (B_9H_{27}) and decaborane ($B_{10}H_{30}$).

8. (Original) The method of claim 5 wherein the tungsten nucleation layer is deposited at a temperature within a range of about 200 $^{\circ}C$ to about 400 $^{\circ}C$.

9. (Original) The method of claim 5 wherein the tungsten nucleation layer is deposited at a pressure within a range of about 1 torr to about 10 torr.

10. (Original) The method of claim 1 wherein each of the tungsten bulk layers is deposited by thermally decomposing a gas mixture comprising a tungsten-containing precursor.

11. (Original) The method of claim 10 wherein the tungsten-containing precursor is selected from the group consisting of tungsten hexafluoride (WF_6) and tungsten carbonyl ($W(CO)_6$).

12. (Original) The method of claim 10 wherein the tungsten bulk layer is deposited at a temperature within a range of about 450 $^{\circ}C$ to about 650 $^{\circ}C$.

13. (Original) The method of claim 10 wherein the tungsten bulk layer is deposited at a pressure within a range of about 10 torr to about 30 torr.

14. (Original) The method of claim 1 wherein the tungsten nucleation layers are deposited in a different process chamber than that used to deposit the tungsten bulk layers.

15. (Original) The method of claim 1 wherein the tungsten nucleation layers are deposited in the same process chamber used to deposit the tungsten bulk layers.

16. (Original) A method of forming a composite tungsten film, comprising:
sequentially depositing tungsten nucleation layers and tungsten bulk layers on a substrate to form a composite tungsten layer, wherein each of the tungsten nucleation layers is deposited by alternately adsorbing a tungsten-containing precursor and a reducing gas on the substrate and wherein each of the tungsten bulk layers is deposited by thermally decomposing a gas mixture comprising a tungsten-containing precursor.
17. (Original) The method of claim 16 wherein each of the tungsten bulk layers has a thickness within a range of about 150 Å to about 250 Å.
18. (Original) The method of claim 16 wherein each of the tungsten nucleation layers has a thickness within a range of about 15 Å to about 50 Å.
19. (Original) The method of claim 16 wherein the composite tungsten film has a thickness within a range of about 500 Å to about 3000 Å.
20. (Original) The method of claim 16 wherein the tungsten-containing precursor is selected from the group consisting of tungsten hexafluoride (WF₆) and tungsten carbonyl (W(CO)₆).
21. (Currently Amended) The method of claim 16 wherein the reducing compound gas is selected from the group consisting of silane (SiH₄), disilane (Si₂H₆), dichlorosilane (SiCl₂H₂), borane (BH₃), diborane (B₂H₆), triborane (B₃H₉), tetraborane (B₄H₁₂), pentaborane (B₅H₁₅), hexaborane (B₆H₁₈), heptaborane (B₇H₂₁), octaborane (B₈H₂₄), nanoborane (B₉H₂₇) and decaborane (B₁₀H₃₀).
22. (Original) The method of claim 16 wherein the tungsten nucleation layer is deposited at a temperature within a range of about 200 °C to about 400 °C.

23. (Original) The method of claim 16 wherein the tungsten nucleation layer is deposited at a pressure within a range of about 1 torr to about 10 torr.

24. (Original) The method of claim 16 wherein the tungsten bulk layer is deposited at a temperature within a range of about 450 °C to about 650 °C.

25. (Original) The method of claim 16 wherein the tungsten bulk layer is deposited at a pressure within a range of about 10 torr to about 30 torr.

26. (Original) The method of claim 16 wherein the tungsten nucleation layers are deposited in a different process chamber than that used to deposit the tungsten bulk layers.

27. (Original) The method of claim 16 wherein the tungsten nucleation layers are deposited in the same process chamber used to deposit the tungsten bulk layers.

28. (Currently Amended) A method of for forming a composite tungsten film for use in a memory cell, comprising:
providing a substrate structure, wherein the substrate structure includes comprises an insulating material, comprising, silicon oxide or silicon nitride, having at least one aperture formed therein; and
sequentially depositing tungsten nucleation layers and tungsten bulk layers, at least partially within the at least one aperture on a substrate to form a composite tungsten layer, wherein each of the tungsten nucleation layers are deposited by alternately adsorbing a tungsten-containing precursor and a reducing gas on the substrate structure and wherein the tungsten bulk layers are deposited by thermally decomposing the tungsten-containing precursor have a thickness less than about 300 Å.

29. (Original) The method of claim 28 wherein each of the tungsten bulk layers has a thickness within a range of about 150 Å to about 250 Å.

30. (Original) The method of claim 28 wherein each of the tungsten nucleation layers has a thickness within a range of about 15 Å to about 50 Å.

31. (Original) The method of claim 28 wherein the composite tungsten film has a thickness within a range of about 500 Å to about 3000 Å.

32. (Cancelled)

33. (Currently Amended) The method of claim 32 28 wherein the tungsten-containing precursor is selected from the group consisting of tungsten hexafluoride (WF₆) and tungsten carbonyl (W(CO)₆).

34. (Currently Amended) The method of claim 32 28 wherein the reducing compound gas is selected from the group consisting of silane (SiH₄), disilane (Si₂H₆), dichlorosilane (SiCl₂H₂), borane (BH₃), diborane (B₂H₆), triborane (B₃H₉), tetraborane (B₄H₁₂), pentaborane (B₅H₁₅), hexaborane (B₆H₁₈), heptaborane (B₇H₂₁), octaborane (B₈H₂₄), nanoborane (B₉H₂₇) and decaborane (B₁₀H₃₀).

35. (Currently Amended) The method of claim 32 28 wherein the tungsten nucleation layer is deposited at a temperature within a range of about 200 °C to about 400 °C.

36. (Currently Amended) The method of claim 32 28 wherein the tungsten nucleation layer is deposited at a pressure within a range of about 1 torr to about 10 torr.

37-38. (Cancelled)

39. (Currently Amended) The method of claim 37 28 wherein the tungsten bulk layer is deposited at a temperature within a range of about 450 $^{\circ}$ C to about 650 $^{\circ}$ C.

40. (Currently Amended) The method of claim 37 28 wherein the tungsten bulk layer is deposited at a pressure within a range of about 10 torr to about 30 torr.

41. (Currently Amended) The method of claim 32 28 wherein the tungsten nucleation layers are deposited in a different process chamber than that used to deposit the tungsten bulk layers.

42. (Currently Amended) The method of claim 37 28 wherein the tungsten nucleation layers are deposited in the same process chamber used to deposit the tungsten bulk layers.

43. (Currently Amended) The method of claim 37 28 wherein the composite tungsten film is used for ~~at least one of word and or bit metallization, or both in the memory cell.~~

44. (New) The method of claim 28 wherein each of the tungsten bulk layers has a thickness of less than about 300 Å.

45. (New) The method of claim 16 further comprising:
depositing a dielectric layer on the substrate surface;
forming at least one aperture within the dielectric layer; and
depositing a barrier layer comprising titanium nitride (TiN) or tantalum nitride (TaN) on the dielectric layer prior to the sequentially depositing tungsten.

46. (New) The method of claim 45 wherein the composite tungsten film has a thickness within a range of about 500 Å to about 3000 Å.